

Reply to Office Action dated December 30, 2008

REMARKS

Claims 1, 9-13, 17-19 and 23-24 are pending in the application. By this Amendment, claims 1, 9, 12-13 and 17-19 are amended and claims 14-16, 21-22 and 25 are canceled without prejudice or disclaimer. Various amendments are made for clarity and are unrelated to issues of patentability.

Entry of the amendments is proper under 37 C.F.R. §1.116 because the amendments: (1) place the application in condition for allowance; (2) do not raise any new issues requiring further search and/or consideration; and/or (3) place the application in better form for appeal, should an appeal be necessary. More specifically, features of dependent claims 14-16 are incorporated into independent claim 9 and features of dependent claims 21-22 and 25 are incorporated into independent claim 19. Additionally, the above amendments are merely for clarity of previously-claimed subject matter. No new issues are raised. Entry is thus proper under 37 C.F.R. §1.116.

The Office Action rejects the claims under 35 U.S.C. §102(b) or 35 U.S.C. §103(a) by U.S. Patent 6,249,087 to Takayama et al. (hereafter Takayama) either alone or in combination with U.S. Patent 6,747,614 to Takayama (hereafter Takayama 614), U.S. Patent Publication 2002/0075206 to Takeda, and/or U.S. Patent Publication 2002/0063663 to Homma. The rejections are respectfully traversed with respect to the pending claims.

Independent claim 1 recites a set-up supplier for supplying an initialing pulse to scan electrodes in an initialization period and for supplying a positive enhancing pulse to the scan electrodes during an enhancing period following said initialization period, wherein the initialing pulse increases to a peak voltage and the positive enhancing pulse has a maximum voltage less

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than the peak voltage. Independent claim 1 also recites a negative voltage supplier for supplying a decreasing pulse to the scan electrodes in the initialization period and for supplying a negative enhancing pulse to the scan electrodes during the enhancing period.

Takayama does not teach or suggest at least these features of independent claim 1. More specifically, Takayama does not teach or suggest a set-up supplier for supplying an initialing pulse to scan electrodes in an initialization period and for supplying a positive enhancing pulse to the scan electrodes during an enhancing period following said initialization period. The Office Action (on page 4) cites Takayama's Embodiment 8 in view of Embodiment 2. Although it is not very clear, applicant believes that Embodiment 8 corresponds to FIG. 15 and that Embodiment 2 corresponds to FIG. 7.

The Office Action states that Embodiment 8 does not disclose a rising ramp waveform increases to a peak voltage and a positive enhancing pulse has a maximum voltage less than the peak voltage. The Office Action then cites Embodiment 2 (including Table 7) as teaching that V_{2y} is less than V_{1y} . The Office Action asserts that it would have been obvious to modify Embodiment 8 with Embodiment 2 for the purpose of controlling discharge in a display to improve quality of the display. However, Embodiments 2 and 8 may not be merely combined as alleged. Additionally, there is no motivation to combine Embodiment 2 with Embodiment 8. The motivation cited in the Office Action is not based on an understanding of driving techniques for either Embodiment 8 or Embodiment 2. The driving techniques for each embodiment are different and may not be combined as alleged. For example, FIG. 15 (Embodiment 8) shows driving waveforms of the display electrodes $Y(1) \dots Y(n)$ during a

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preparation period TR that are clearly different than the driving waveforms of the display electrodes Y(1)...Y(n) in FIG. 7 (Embodiment 2). See, for example, FIG. 15 showing the driving voltage V22y and V32y for the display electrodes y and the driving voltages V12x and V21x for the display electrode x. Takayama also clearly describes charge forming and charge adjusting techniques in the preparation period TR. See, for example, col. 10, line 14-col. 13, line 50. Takayama also clearly describes that the FIG. 15 waveform (Embodiment 8) is different in regard to charge forming and charge adjusting. See col. 14, lines 23-40. Takayama clearly does not suggest that different voltages from different waveforms may be simply combined, as alleged in the Office Action. Takayama actually teaches away from such a combination.

For at least these reasons, Takayama does not teach or suggest that the initialing pulse increases to a peak voltage and the positive enhancing pulse has a maximum voltage less than the peak voltage. The other applied references do not teach or suggest the features of independent claim 1 missing from Takayama. Thus, independent claim 1 defines patentable subject matter.

Independent claim 9 recites a plasma display panel (PDP) having scan electrodes and sustain electrodes to form a plurality of electrode pairs, and a first driving circuit that initializes discharge cells by applying a first signal having an initialing pulse to the scan electrodes during a reset period of at least one sub-field, the initialing pulse increasing to a first maximum voltage value, wherein the first signal further has a first decreasing pulse provided after the initialing pulse during the reset period of the at least one sub-field. Independent claim 9 also recites the first driving circuit applies a second signal having an enhancing pulse to the scan electrodes after applying the first signal in the reset period and before an address period of the at least one sub-

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field, wherein the second signal further has a second decreasing pulse provided after the enhancing pulse in the at least one-sub-field, the enhancing pulse increasing to a second maximum voltage value less than the first maximum voltage value. Still further, independent claim 9 also recites the first decreasing pulse is provided until a voltage provided to the scan electrodes reaches a first voltage value, and the second decreasing pulse is provided until the voltage provided to the scan electrodes reaches a second voltage value, wherein the first and second voltage values are different.

For at least similar reasons as set forth above, the applied references do not teach or suggest at least these features of independent claim 9, which includes features of dependent claims 14-16. More specifically, Takayama does not teach or suggest a first driving circuit applying a first signal having an initialing pulse (increasing to a first maximum voltage value) and a first decreasing pulse (until reaching a first voltage value) and the first driving circuit applies a second signal having an enhancing pulse and a second decreasing pulse (until reaching a second voltage value), the enhancing pulse increasing to a second maximum voltage value less than the first gradually rising waveform, and first and second voltage values are different.

Takayama's Embodiment 2 (FIG. 7) does not suggest the claimed first decreasing pulse and second decreasing pulse. Takayama's Embodiment 8 also does not teach that the enhancing pulse increasing to a second maximum voltage value less than the first gradually rising waveform. Further, as discussed above, the combination of Embodiment 2 and 8, as alleged in the Office Action, is improper. The combination is based on impermissible hindsight as there is no suggestion for the modification.

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The other applied references, including Takeda, do not teach or suggest the features of independent claim 9 missing from Takayama. There also is no suggestion of how Takeda may be combined with Embodiments 2 and 8 of Takayama, and result in an operable apparatus. Thus, independent claim 9 defines patentable subject matter.

Independent claim 19 recites providing a first signal including an initialing pulse followed by a first decreasing pulse to the scan electrode during an initialization period of at least one sub-field, and providing a second signal including an enhancing pulse followed by a second decreasing pulse to the scan electrode after providing the first signal and during the at least one sub-field, wherein a lowest voltage of the first decreasing pulse is less than a lowest voltage of the second decreasing pulse. Independent claim 19 also recites providing a scan signal to the scan electrode during an address period of the at least one sub-field, the scan signal being provided after the second signal in the at least one sub-field, providing at least one sustain signal to at least one of the scan electrode or the sustain electrode during a sustain period of the at least one sub-field, wherein the initialing pulse of the first signal has a first peak voltage value, and the enhancing pulse of the second signal has a second peak voltage value, and wherein the first peak voltage value is greater than the second peak voltage value.

For at least similar reasons as set forth above, the applied references do not teach or suggest at least these features of independent claim 19, which may include features of dependent claims 21-22 and 25. More specifically, Takayama does not teach or suggest providing a first signal including an initialing pulse followed by a first decreasing pulse, and providing a second signal including an enhancing pulse followed by a second decreasing pulse, the initialing pulse of

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the first signal has a first peak voltage value, and the enhancing pulse of the second signal has a second peak voltage value, wherein the first peak voltage value is greater than the second peak voltage value, and wherein a lowest voltage of the first decreasing pulse is less than a lowest voltage of the second decreasing pulse. The other applied references do not teach or suggest the missing features of independent claim 19. Thus, independent claim 19 defines patentable subject matter.

For at least the reasons set forth above, each of independent claims 1, 9 and 19 defines patentable subject matter. Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter at least for this reason. In addition, the dependent claims recite features that further and independently distinguish over the applied references.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1, 9-13, 17-19 and 23-24 are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this,

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concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

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